ATTACHMENT A

Summary of Items Reviewed

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
115 kV - Breaker K1	Transformer T-4 feed to 115 kV bus: required to supply power from the 345 kV switchyard to the Startup Transformers.	No automatic actions required except fault clearing; safety busses would disconnect or be prevented from connecting to circuit after a fault.
115 kV - K.1 Logic Relay	RCIC logic relay K.1 fails to operate on demand. Rationale: Malfunction of RCIC turbine trip instrumentation could cause loss of RCIC System.	The inspectors found no specific operator action for this component and that a failure of the logic relay would result in control room alarms which would be responded to by the operators. The inspectors found that related control room alarms were functioning properly, and that the associated alarm response procedures were current.
125 V Battery B-1 and A-1	Station Battery: Supplies power to the station 125 VDC loads when the battery chargers are not available.	Detailed review completed.
24 Vdc - ES-24DC-2	Power Supply Converter: Supplies power to the 24 VDC ECCS Analog Trip System.	No low margin or other issues identified.
345 kV - Breaker 381-1	Northfield 345 kV line to 345 kV North Bus: required to provide power from the Northfield 381 to the 345 kV switchyard.	Detailed review completed.
4 Kv - Breaker 12	Bus 1 Feed Breaker from UAT: required to open on generator trip to enable access of one safety train to the offsite source through the SUT	No low margin issues identified.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
4 Kv - Breaker 13	Bus 1 Feed Breaker from SUT: required to close on generator trip to enable access of one safety train to the offsite source through the SUT .	Detailed review completed.
4 Kv - Breaker 22	Bus 2 Feed Breaker from UAT: required to open on generator trip to enable access of one safety train to the offsite source through the SUT.	The inspectors found that the only operator action for this component was breaker open/close operation. Additionally, the inspectors found that the related control room alarms were functioning properly and that the associated alarm response procedures were current. The inspectors found no issues with this component related to operator actions.
4 Kv - Breaker 23	Bus 2 Feed Breaker from SUT: required to close on generator trip to enable access of one safety train to the offsite source through the SUT.	Detailed review completed.
4 Kv - Breaker 3V	Vernon Supply Breaker to Bus 3: required to supply power from the Alternate AC Power source to one 4160V safety bus.	No specific issues identified with breaker. Other issues reviewed as part of overall Station Blackout Capability.
4 Kv - Breaker 3V4	Vernon Tie Breaker: required to supply power from the Alternate AC Power source to either 4160V safety bus.	Detailed review completed.
4 kV UV Relays	4160V Undervoltage Relays: required to provide adequate voltage to safety-related AC loads, reset setpoint must be optimized to prevent spurious loss of offsite power.	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
69 kV - Vernon Generator	Vernon Hydroelectric generator station: required to supply power from the Alternate AC Power source to either 4160V safety bus.	Detailed review completed.
69 kV to 4160 V Vernon Transformer	Vernon Tie Transformer: required to supply power from the Alternate AC Power source to either 4160V safety bus.	Detailed review completed.
125 VDC Distribution Panels	Supplies 125 VDC loads.	Detailed review completed.
Alignment of RHRSW to the RPV	Operator fails to align the RHRSW injection to RPV.	Aligning RHRSW injection to the RPV is one of the methods which can be used for RPV injection to prevent core damage in accordance with EOPs given an ATWS scenario. The validated time through simulator observation was 1 minute to complete the actions for alignment. Additionally, prior to using RHR SW for RPV injection, other systems such as condensate/feedwater , CRD, and RHR will be used to attempt to fill the RPV. The operators are regularly trained and evaluated in this event scenario further reducing the likelihood of the task not being completed within the required time.
Bus Transfer Scheme	Circuit breakers, synchronism check relays, timing relays, and voltage relays required to enable transfer of 4160V buses from the Unit Aux Transformer to the Startup Transformers.	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
Closure of Vernon Tie Breakers	Operator fails to close the Vernon tie breakers.	One of the primary AC power recovery actions in the event of a loss of normal power is to use the dedicated tie line from the Vernon hydro Station to power either 4260VAC Bus 3 or 4 (vital power). The action is performed by the operators in the main control room by manipulating switches for 2 DC powered breakers. Validation studies and operator observation in the simulator have shown that the task can be accomplished in less than 4 minutes. Adequate margin exists currently and for the CPPU to accomplish the action. Additionally, operator response to loss of power events is trained regularly in the simulator and classroom. While no issues identified with VY operator actions, a finding was identified with the licensee's overall station blackout response.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
Condensate Pump	Review condensate operation before and after the power uprate (including recirc pump runback modification). The Condensate and Feedwater system does not directly perform any safety-related function. Portions of the Feedwater system and check valves provide Reactor Coolant Pressure Boundary and Containment Isolation functions. The condensate pumps 1) supply water to the Feedwater pumps and 2) provide sufficient NPSH for operation of the FW pumps. The loss of a condensate pump could be a contributing factor to a transient initiation. The condensate pumps are directly impacted by the EPU due to the need to increase the flow volume by approximately 20%.	No low margin or other issues identified.
Containment Pressure	During a loss of coolant event or an ATWS the containment pressure will be elevated and the suppression pool level will increase.	Detailed review completed.
CST Transient Analysis Temperature Non-conservative	Transient analysis Condensate Storage Tank Temperature non-conservative compared to actual maximum operating temperatures. This issue stems from a similar event at Point Beach.	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
CST Level Instrumentation	Rationale: Important for maintaining required CST inventory for RCICS and controlling automatic transfer of RCICS suction to the suppression pool.	Detailed review completed.
CV-109	Failure of check valve CV-109 (valve between the N2 bottle and the SRV) to open. Failure of this check valve to open will prevent N2 supply to the Main Steam Safety Relief Valves.	Detailed review completed.
CV-19	RCIC check valve CV-19 (RCIC suction check valve from the CST) fails to open on demand. This valve must open to provide flow from CST to RCIC pump suction, and close to prevent flow from torus to CST during RCIC pump suction transfer.	A detailed review was not performed for this check valve because no performance problems were indicated from the maintenance history.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
CV-2-1A, 1B, 1C	RFP discharge check valves. They are risk significant because if they fail to close following an RFP trip they could make other RFPs inoperable. Prior to EPU two pumps are operational. After EPU three pumps will be operational. When two pumps are operational, one of the MOVs, 4A, 4B or 4C will be closed for the non-operational pump as such, this is not a current potential event. However, after EPU the third valve will not be closed thus this is a potential failure scenario.	A detailed review was not performed for these check valves because no performance problems were indicated from the maintenance history.
CV-22	RCIC check valve CV-22 (RCIC injection path discharge check valve) fails to open on demand. This valve must open for RCIC injection flow. The valve must also fully close when the pump is not in operation to prevent back-leakage and a possible waterhammer.	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
CV-2-27B	This valve is the feedwater isolation valve upstream of the RCIC injection path. The risk significant function of the component is to close to prevent RCIC from flowing back into the feedwater system. EPU uprate will increase the flow through this check valve by approximately 20%, however the function of the valve is not altered.	A detailed review was not performed for this check valve because no performance problems were indicated from the maintenance history.
CV-2-28B	Feedwater check valve CV-28B ('B' feedwater line check valve inside containment) fails to open on demand. This valve is located on drawing G-191167, H-5. Failure to open will prevent flow from either the RCIC or the Feedwater system. EPU uprate will increase the flow through this check valve by approximately 20%, however the function of the valve is not altered.	A detailed review was not performed for this check valve because no performance problems were indicated from the maintenance history.
CV-2-96A	Feedwater check valve V96A fails to open on demand. Failure of this valve will prevent flow from either the RCIC or the FW system. EPU uprate will increase the flow through this check valve by approximately 20%, however the function of the valve is not altered.	A detailed review was not performed for this check valve because no performance problems were indicated from the maintenance history.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
CV-40	RCIC check valve CV-40 (RCIC suction check valve from the suppression pool) fails to open on demand. This valve must open to provide a flow path from the torus to the RCIC pump suction.	A detailed review was not performed for this check valve because no performance problems were indicated from the maintenance history or walkdown.
CV-6/7	RCIC check valves CV- 6/7 (RCIC turbine exhaust check valves to torus) fails to open on demand.	Detailed review completed.
CV-72-109	Failure of check valve CV-109 (N2 bottle supply check valve to the plant N2 system) to close. The component is risk significant because if the check valve failed to close, the N2 bottle could bleed down to the plant N2 system.	Detailed review completed.
Digital Feedwater Control/Single Element Control	Following the modification that installed the digital feedwater control system, the licensee had problems with loss of inputs to the three-element controller (steam flow). This resulted in a reactor level transient. Since the event the plant had been operating in single-element control. Evaluate the modification and the acceptability of operating in single-element. Also determine if operation in single-element control would challenge the licensee's assumption that the plant would not scram following a single reactor feed pump trip, post-uprate.	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
DPIS-83/84	Spurious high steam flow signal. This steam flow instrument isolates RCIC steam in the event of a line rupture (indicated by high flow). Spurious isolation would result in the loss of RCIC flow.	These instruments are not included because there is significant margin in the setpoint to detect a steam line rupture, as well as margin between the normal operating point and the setpoint.
EOP/NPSH Fidelity	Verify fidelity between Emergency Operation Procedures and NPSH calculations and Containment Spray operation.	Detailed review completed.
FCV-2-4	FCV.4 (condensate pump minimum flow valve) fails to open on demand.	Detailed review completed.
FCV-2-4 Instrumentation	Failure of FCV.4 (condensate pump minimum flow valve) control instrumentation.	Detailed review completed.
Feed/Condensate Control	Operator fails to initiate and/or control feedwater/condensate.	Detailed review completed.
FT-58/FE-56	RCIC pump discharge flow instrument. This instrument is associated with the RCIC turbine control logic.	Detailed review completed.
GE SIL 351	GE SIL 351 - HPCI and RCIC Turbine Control System Calibration.	Vermont Yankee implemented SIL 351R.2 and provided the procedural changes recommended in the SIL for the HPCI system (OP 5337 Rev. 7). SIL 351 does not apply to RCIC since RCIC does not use a ramp generator (RGSC). This SIL is primarily procedural change recommendations and is not a high risk/low margin system.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
GE SIL 377	GE SIL 377 RCIC Startup Transient Improvement with Steam Bypass (June 24, 1982).	GE SIL 377 recommended a bypass for the steam supply line to the turbine for improved startup performance during a transient where RCIC is needed. This does not apply to Vermont Yankee since the SIL was a recommendation for plants who have issues with cold startup of the RCIC system. Upon talking to the system engineer, these issues have not existed for at least 20 years at VY.
GE SIL 467 (Bistable Vortexing)	GE SIL 467 and IEN 86-110 - Bistable vortexing is still a phenomenon that occurs periodically at VY.	The first occurrence of bistable vortexing at Vermont Yankee was following beginning of cycle 12 when recirculation system piping was replaced; however, this is a low risk event and thus does not meet the high risk / low margin criteria for this inspection. Vermont Yankee has had problems with bistable vortexing in the past and responded in depth to this SIL. The licensee responded to the SIL, added discussion on bistable vortexing at VY and action items for operators when bistable vortexing occurs. A review of Vermont Yankee's response to SIL 467, showed VY satisfied GE's recommended actions and placed guidance in OP 2110, Recirculation Procedure to aid the operators in identifying bistable vortexing.
GL 96-05, MOV Periodic Verification	GL 96-05 - Implementation of program for MOV Periodic Verification (As applicable to the selected sample of valves RCIC-MOV-15, 16, 131 and 132)	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
IN 2001-13 (SLC Relief Valve Margin)	Information Notice 2001-13 (8/10/01) - Inadequate Standby Liquid Control System Relief Valve Margin (Susquehanna, Units 1 and 2) Susquehanna's power uprate increased SRV setpoint pressure thus increasing SLC discharge pressure. However, the maximum SLC pump discharge pressure used a non-conservative maximum reactor vessel pressure in accident analysis.	Detailed review completed.
LER 3871995009 (LCO 3.0.3 Entry)	LER 1995-009-00 (7/3/95) - Condition Prohibited by the Plant's Technical Specifications (Susquehanna, Unit 1) - Non-conservative plant input into reactor core flow calculation.	Feedflow used in the analysis for power uprate is consistent with current feedflow indications.
LER 3251997005 (FW Indication Error)	LER 1997-005-01 (8/8/97) - Feedwater Flow Indication Discrepancy (Brunswick Steam Electric Plant, Unit 1).	Vermont Yankee does not have and is not required to have chemical tracer mass flow rate tests. This is more conservative then having the tracers since the chemical tracer mass flow rate tests are controversial and have had past issues. VY is waiting for industry or regulatory guidance on this issue before adding this test.
LER 2961998001 (LOCA Sensor Problem)	LER 1998-001-00 (4/1/1998) - Computer Modeling Indicates Sensors May Not Detect All Possible Break Locations (Browns Ferry, Unit 3).	Vermont Yankee does use the GOTHIC computer code to analyze high energy pipe breaks; however, this is a low risk issue and presented no significant safety issue at Browns Ferry.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
LER 2601999009 (Scram Due to EHC Leak)	LER 1999-009-00 (10/14/99) - Manual Reactor Scram Due to EHC Leak (Browns Ferry Nuclear Power Station, Unit 2).	The EHC leak was on a very specific 3/8 inch nominal outer diameter tubing connection which consisted of socket weld glands and standard nuts to connect the accumulator to a pressure transmitter. The leak was due to poor fabrication and poor work practices specific to Browns Ferry.
LER 2372001005 (1/7/02)	LER 2001-005-00 (1/7/02) - Unit 2 Scram Due to Increased First Stage Turbine Pressure (Dresden, Unit 2).	Vermont Yankee responded to GE SIL 423, in 1998, by implementing corrective actions.
LER 4612002002 (Inadequate PM on FW System)	LER 2002-002-00 (7/11/02) - Inadequate Preventive Maintenance Program for the Feedwater System Results in Lockup of a Turbine-Driven Reactor Feed Pump and Scram on High Reactor Pressure Vessel Water Level During Extended Power Uprate Testing (Clinton Power Station). Feedwater increased due to the power uprate; however, the feedwater limit switch did not increase to accommodate this increase in flow.	This operating experience does not apply since Vermont Yankee does not have turbine driven feedwater pumps, and this issue does not apply to other turbine driven pumps in the plant.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
LER 3412002005 (Non-Conservative Setpoint)	LER 2002-05 (1/16/03) - Discovery of Non-Conservative Setpoint for the Thermal-Hydraulic Stability Option III Oscillation Power Range Monitor (OPRM) Period Based Algorithm, Tmin (Fermi, Unit 2).	This OE does not apply to Vermont Yankee since power oscillations are monitored using approved BWROG Option 1D not Option III. Vermont Yankee does not have Oscillation Power Range Monitors, Period Based Detection Algorithms, and Tmin values. Option III is used for larger BWRs that have local power oscillations. Since Vermont Yankee has a small BWR core, only core-wide oscillations occur (not local oscillations). The inspector met with an individual from power uprate (and used to work in reactor engineering) and discussed, in detail, core monitoring using Option 1D for the new ARTS/MELLA core design and the power uprate core design.
LER 4542003003 (Maximum Power Exceeded)	LER 2003-003-00 (9/29/03) - Licensed Maximum Power Level Exceeded Due to Inaccuracies in Feedwater Ultrasonic Flow Measurements Caused by Signal Noise Contamination (Byron).	Detailed review completed.
LER 3411992009	LER-92-009-00 (11/20/92) - Safety Relief Valves Set Pressure Outside Technical Specifications (Fermi, Unit 2).	VY has had no issues with setpoint drift on the SRVs or RVs in containment. Setpoint drift considered in this LER was an indication of disc-to-seat sticking due to corrosion binding on the SRVs and RVs at Fermi thus making these valves fail their set pressures tests.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
LSHH-4A	Level switch LSHH 4A contacts fail/short. High Water Make up - Condenser level Control Switch Fails high - auto make malfunctions to the CST - Operator Action is required. No EPU impact.	Operator can take manual action to overcome this failure. The consequence of the failure of the switch is not significant because the operator can take manual control.
Manual Initiation of HPCI/RCIC	Operator fails to manually initiate HPCI and RCIC systems.	Detailed review completed.
Manual Operation of SRVs (Medium LOCA)	Operator fails to manually open the SRVs for a medium LOCA.	Emergency Operating Procedures (EOP) require operator action to manually open the SRVs to depressurize the reactor under medium break LOCA conditions. Validation studies and operator observations in the simulator have shown that given various factors that influence human performance (stress, training, equipment failures, etc.), the task to open the SRVs manually would be accomplished in less than 7 minutes which is lower than the 33 minutes (or 24 minutes for CPPU) needed to assure > 1/3 core coverage. Additionally, operator training frequently focuses on this event making it unlikely that the operator would fail to perform the task within the required time.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
Manual Operation of SRVs (Small LOCA/Transient)	Operator fails to manually open the SRVs for transient/small LOCA.	Emergency Operating Procedures (EOP) require operator action to manually open the SRVs to depressurize the reactor under transient and small break LOCA conditions. Validation studies and operator observations in the simulator have shown that given various factors that influence human performance (stress, training, equipment failures, etc.), the task to open the SRVs manually would be accomplished in less than 5 minutes which is much lower than the 66 minutes (or 48 minutes for CPPU) needed to assure > 1/3 core coverage. Additionally, operator training frequently focuses on this event making it unlikely that the operator would fail to perform the task within the required time.
Manual RCIC operation-Appendix R Safe Shutdown	Appendix R Safe Shutdown Analysis - Operator fails to manually initiate RCIC system using alternate shutdown panels (Generic Human Actions that are Risk Important), and GE document NEDC-330090P, Table 10-5 (Assessment of Key Operator Action).	Detailed review completed.
MOV-131	RCIC MOV 131 (RCIC turbine steam supply valve) fails to open on demand. This valve is required to open to provide steam to the RCIC turbine for operation.	Not included because valve has adequate design margin to open when required.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
MOV-132	RCIC MOV 132 (cooling water valve to the RCIC lube oil cooler) fails to open on demand. This valve is required to open to provide cooling water to the RCIC pump lube oil cooler. Failure to cool the lube oil could result in failure of the pump/turbine.	Not included because valve has adequate design margin to open when required.
MOV-15/16	RCIC MOV 15/16 (steam supply to RCIC turbine) fails closed during its mission time. These valves are required to close in the event of a line break in the RCIC turbine steam supply to isolate the HELB. These valves are also required to remain open when the RCIC pump is required to operate.	Detailed review completed.
MOV-18	RCIC MOV 18 (RCIC pump suction valve from the CST) transfers closed during its mission time. This valve is required to automatically close when the RCIC pump suction is transferred from the CST to the torus. This valve must remain open while the RCIC pump is operating from the CST.	Not included because valve has adequate design margin to close when required.
MOV-21/20	RCIC MOV 21 (inboard discharge valve to the reactor vessel) fails to open on demand. Also look at MOV-20 (the normally open outboard discharge isolation valve). These valves must automatically open to provide RCIC injection flow in response to an RCIC initiation signal.	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
MOV-27	This is the RCIC minimum flow valve. This valve is required to open at low RCIC flow to protect the pump.	Detailed review completed.
MOV-39	RCIC MOV 39 (RCIC suction valve from the suppression pool) fails to open on demand. This valve is required to open when the RCIC pump suction is transferred from the CST to the torus.	Detailed review completed.
MOV-41	RCIC MOV 41 (RCIC suction valve from the suppression pool) fails to open on demand. This valve is required to open when the RCIC pump suction is transferred from the CST to the torus.	Not included because valve has adequate design margin to open when required.
MOV-64-31	MOV 64-31 (manual makeup valve from the CST to hotwell) fails to open on demand.	Failure of this valve will prevent make-up from the hot-well to the CST. The loss of this valve would not be safety significant and there are no indications that there is low margin on for this valve
Offsite Transmission System	Offsite Transmission System: preferred source of power to the 4160V safety buses; must remain stable and available following the trip of the VY generator.	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
Operator Bypasses the MSIV Isolation Interlocks	Operator Bypasses MSIV Isolation Interlocks. The justification is the decrease in the Allowable Action Time for the operators at the EPU level (CPPU). It is based on input from the Human Performance technical staff, Appendix A of NUREG 1764 (Generic Human Actions that are Risk Important), and GE document NEDC-330090P, Table 10-5 (Assessment of Key Operator Action).	The allowable action time to bypass the MSIV low-low level isolation interlocks is based upon the time it would take to reach the RPV low-low level setpoint for an ATWS with no injection. Validation studies by the licensee have shown that the task would be accomplished for transient and LOCA events within the required time. The margin to accomplish the task is adequate, for current and CPPU conditions, given other operational factors and steps in the EOPs which must be taken into account (e.g., a high main steam line radiation isolation signal maintaining the valves closed). Operators train and are evaluated and tested on a regular basis for this scenario further reducing the likelihood that the task would not be completed in the time required.
Operator Inhibits ADS	Operator action to inhibit ADS. The justification is the decrease in the Allowable Action Time for the operators at the EPU level (CPPU). It is based on input from the Human Performance technical staff, Appendix A of NUREG 1764 (Generic Human Actions that are Risk Important), and GE document NEDC-330090P, Table 10-5 (Assessment of Key Operator Action).	The operator action to inhibit ADS is one of the first actions taken by the operators under certain transient conditions in the EOPs. The allowable action time is based on the time to reach the vessel level low-low set point for ATWS without injection plus two minutes for the ADS timer. Validation studies and operator observation in the control room have demonstrated that the action would be accomplished in less than 3 minutes. The margin to complete the task is not significantly changed under CPPU conditions. Additionally, operators are trained and tested regularly in this EOP action step.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
Passive Failure of Feedwater Piping	Review effect of increased feedwater flow on flow-accelerated corrosion rates following the power uprate.	Detailed review completed.
PB IR 2002-011 (HPCI Functional Issue)	Peach Bottom Finding for IR 50-277/2002-011 (8/5/02) - Finding Related to High Pressure Coolant Injection Function (may apply to RCIC system at VY).	Detailed review completed.
PCV-23	RCIC PCV 23 (RCIC air operated lube oil temperature control valve) fails to open on demand. This valve uses instrument air to control its setpoint and fails fully open on a loss of instrument air. This valve is required to provide cooling water, at the correct pressure, to the RCIC pump lube oil cooler when the RCIC pump is operating.	Detailed review completed.
PS-67	Spurious RCIC low suction pressure trip signal. This instrument will cause the RCIC pump to trip in the event of low pump suction pressure. Spurious trips will result in a loss of RCIC flow.	Not included because there is significant margin in the setpoint to prevent a spurious trip.
PSH-72A/B	Spurious RCIC turbine exhaust high pressure trip. This instrument will trip the RCIC pump in the event of high pressure in the exhaust steam line. Spurious trips will result in a loss of RCIC flow.	Not included because there is significant margin in the setpoint to prevent a spurious trip.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
PT-59/60	RCIC pump discharge pressure. This instrument is associated with the RCIC turbine control logic.	Not included because there is significant margin in the setpoint.
PT-68	Spurious low steam line pressure signal. This instrument will isolate steam flow to the RCIC turbine in the event of low steam supply pressure, indicating a steam line break. Spurious isolation would result in a loss of RCIC flow.	Not included because the pressure switch setpoint has significant margin to prevent a spurious pump trip.
PT-70	Spurious RCIC trip on high turbine exhaust pressure signal. Component ID is PT-70. Include exhaust rupture disks S3 and S4. This instrument will trip the RCIC pump in the event of high pressure in the exhaust steam line. Spurious trips will result in a loss of RCIC flow.	Not included because there is significant margin in the setpoint and operating pressure to prevent a spurious trip.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
Manual operation of MOV 64-31	Operator fails to manually open MOV 64-31 (used to manually transfer makeup from the CST to the condenser).	The operator action to manually open valve MOV 64-31, Hotwell Emergency Makeup Valve, is performed in the main control room. The action is required when turbine bypass is not available (during an MSIV closure event). In that case automatic makeup to the hotwell from the Condensate Storage Tank (CST) may not be sufficient to keep up with reactor vessel makeup requirements (feedwater pumps providing vessel level makeup). Validation studies and operator observations have estimated a 1 minute time to manipulate the valve from the control room. If the valve is required to be opened from the field the estimates are less than 15 minutes, however, other EOP mitigation strategies such as use of low pressure ECCS pumps, would assure core coverage if the valve could not be opened.
RB/Torus Vacuum Breakers	Reactor Building to Torus vacuum breakers. The vacuum breakers are required to open to prevent a vacuum in the containment. These also must remain closed to ensure containment integrity and to prevent loss of overpressure for ECCS NPSH.	Detailed review completed.
RCIC Pump P-47-1A and Turbine TU-2-1-A	RCIC pump P-47-1A fails to start on demand. This sample includes the turbine driven RCIC pump, the governor valve, and trip throttle valve.	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
Reactor Feed Pump	Failure of the feedwater pump will fail to deliver flow required for normal operation or to mitigate an accident. Prior to EPU 2 of three feedwater pumps are required to support the Feedwater system requirements. As such there is a 50% spare capability. For EPU three pumps are required to operated due to the increase requirements of feedwater flow.	Detailed review completed.
RHR Pump	Review RHR pump NPSH calculation, associated suction strainers, bubble ingestion, and torus vortexing issues.	Detailed review completed.
Safety Valve (New)	Addition of third main steam safety valve for power uprate. Failure of SSV to open and relieve pressure during transients or small/medium break LOCA.	Detailed review completed.
SLC Initiation with Condenser Failed	Operator fails to initiate SLC with the main condenser failed. The justification is the decrease in the Allowable Action Time for the operators at the EPU level (CPPU). It is based on input from the Human Performance technical staff, Appendix A of NUREG 1764 (Generic Human Actions that are Risk Important), and GE document NEDC-330090P, Table 10-5 (Assessment of Key Operator Action).	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
Spurious High Steam Line Space Temperature Trip	Spurious RCIC trip on high steam line space temperature (instrument TS 79 through 82). These instruments would result in isolation of the steam flow to the RCIC turbine in the event of a steam line break. A spurious trip would result in loss of RCIC flow.	Not included because there is significant margin between the setpoint and the operating temperature to prevent a spurious trip.
Spurious High Steam Tunnel Temperature Trip	Spurious RCIC trip on a high steam tunnel temperature trip signal. These instruments would result in isolation of the steam flow to the RCIC turbine in the event of a steam line break. A spurious trip would result in loss of RCIC flow.	Not included because there is significant margin between the setpoint and the operating temperature to prevent a spurious trip.
Spurious Reactor High Level Trip	Spurious high reactor water level signal (trip could affect both the RCIC pump or feed water pump). These instruments would result in tripping the RCIC turbine in the event of high RPV level. A spurious trip would result in loss of RCIC flow.	Excluded because HPCI and the RFP trip signals are provided by different instruments and the probability of a simultaneous failure of these instruments is extremely low.
SR-26	SR-26 (RCIC supply to lube oil cooler relief valve) fails open. This component is designed to protect the RCIC lube oil cooler and may be important on a loss of IA when the flow control valve fully opens (based on interview with RCIC System Manager).	Detailed review completed.
SRVs	Safety relief valves allow the reactor to be depressurized.	Detailed review completed.

SSC/OA/OE	Description	Detailed Review Completed / Basis For Exclusion
Vernon Tie Line	Operator monitoring of Vernon tie line to ensure availability as a station blackout source.	Detailed review completed.